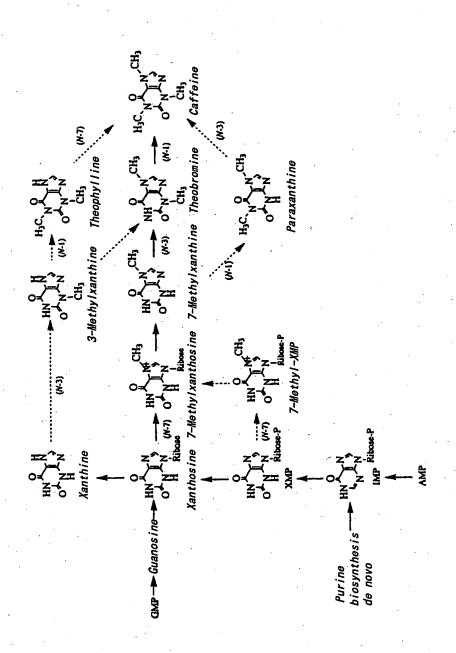
APPLN: Filing Date: October 5, 2001
Title: Theobromine Synthase Polypeptide of Coffee Plant and the Gene Encoding Said Polypeptide Inventor(s): Hiroshi Sano et al.
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TITLE: THEOBROMINE SYNTHASE POLYPEPTIDE OF COFFEE PLANT AND THE GENE ENCODING SAID POLYPEPTIDE \( \)

Inventor(s): Hiroshi SANO et al: Application Serial No: 09/971,020

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720 810 900 990 540 630 360 CAGACATATA AGTGCATTAA AGCAAGAAAT TGCTGCCAAG TAAGCTCCG GGTTTGCGAC **AAGATTTTAC** SCGACGGCCC CAATGTTCC CAGCGCATGT **AATTGGGGA**1 SCAGACTCT AAGAATTCAT AACATCAACA GACAAAGTTA CTTTCCACG TGGTGACTG CAATTTACGA ATATTCCACA GTTTTCATGC CATGCTAGAG **GGAGATGAAT** CCAGAGAAGT TGGACAGT TGCAGACT TTCAATTCG CAACTTGCCC AATGCCTGGC **ATATTTGGAT** CATTTGTAAA GGAAGAAAAA **AATTTTATAC** CAGCGATGAA TATACCTGAC **IGCCAAAAAA ACAAAGTATT** TCCCAGCGGT TTCGTAATAA CCCAGTATA GGGACACTGT **TCCAGAAGGC** GACGTCTGGG GAGAAGCTAT TGTTGCGGGC **FCCAAAATGA FAATAGCCGC** GGAAAGGATT TATCCCAGGT CATTICIC GTTGCTGAGG GAGGAGGAAG AGTCATTTTG **AATAATCTTA** GTACGGGAAT CTCCGCCCG GGCCGAATGC GGATCGTGCC AGATCCCATT TTAACCGTT ACTGATCT CTTCAGTTT GGTTTTTCTG ACGCAAAATA TGCCAAGTA CATCCTAGCA TCTTACAGT CAAAGCAAGT GCTTTCACGT **AAACGACTTG** AGGCTTCTAT GAACAATGC **AAACACACTT** GTGCATGGT **AAGAAGTAAA** TGATGATGA SCTTGGGCAA TTTGTGTTA TTCCGGACC CACCATTCA **AAGAAAATGG** TTACGAACC TTTACACTC TTACTCTTC AGATGGCAAT GGAAGAGT GCCAAGGTGA TGGGATGCG GACTTACTTG GCTTCAGTAG **ATTAGATCAG** TGAATGGAGC **AAACTTGAGA** SGCTTCTCTA AAAAGGAGCA TAGAACGTC AAGGTTATCC AGGATGCGTT TCCATGCAT STCCTGCATA SAAGAATGAA CTTCTACCGC CCCGAGGAG CACTGCGAAC CACATTITITA SAATACCATG **AATCTATACA GGCATCATTA** SAATGCAGCA ACTGGTTCTC **AGTTGCAGAT** TATGATGCT YAAAAAAA **AAAGCTTGT** 

FIG 2A

APPLN: FILING DATE: OCTOBER 5, 2001
TITLE: THEOBROMINE SYNTHASE POLYPEPTIDE OF COFFEE PLANT AND THE GENE ENCODING SAID POLYPEPTIDE INVENTOR(S): HIROSHI SANO ET AL:
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TCCAGAAGGC 630 TCCTTACTTG 720 GACATCTGGA 810 1080 1170 GTTCTTTTGA 900 CCCCAGAATA 990 540 CCAAAATGA GAGAAGCTAT **TATCCCAGGT TAATAGCCGC** GGGACATTG CCTCCGCCCG GGCCGAATGC GTTGTTGAGG GAGGAGGAAG TGCCAAGTA AGATCCCATT **AATCATTTTG** GGATCGTGCC TTAACAGTTC CTTCAATTT ACTGATCTT TTACGAACC CATCCTCGCA GGTTTTTCTG AAGAAAATGG ACGCAAGATA AGATGGCAAT AAACGACTTG GTGCATAGTT AGGCTTCTAT TCTTACAGT GCTTTCACGC CAAAGCAAGT AACCTGTCCT TGAACAATGC CTTCCGGACC AAACACACTT TGATGATGA GCTTGGGCAA **AAGAATTAAA** CCACCATTCA TTTACACTC TTACTCTTC CGGAAGAGTT TTGGGATGCG C GCTTCAGTAG GGCATCATTA CTTAGATCAG GCCAAGGTGA AAAAGGAGCA GAATACCATG GACTTACTTG TTATGATGCT GGCTTCTCTA **AAACTTGAGA** CCCCGAGGAG TCAATGCATT AGGATTCGTT AATCTATGCA GAATGCAGCA CACTGCGAAC CACATTTTTA AGTTGCGGAT GAAGAATGAA TTCTACCGC ACTGGTTCTC CCTTCAATCA AGTGCATTAA GCTGCCAAG **AATTGGGGAT AAGATTTTAC** TCGACGGCCC **ICAATGTTCC** TTAAGCTCCG CAGCGCATGT GGTTTGCGAC **GGCAAGAAAT GCAGACTCTT AACATCAACA** GACAAAGTTA GTTTTCATGT TCTTTCCACG TGGTGACTG CAATTTACGA **GGAGATGAAT** CATGCTAGAG ATATTCCACA **AAGAATTCAT** TTGGACAGTT TGGAGACTT CCAGAGAAGT CATTTGCAAA GGAAGAAAAA **AATTTTGTAC** CAGCGATGAA TATACCTGAC TAGTGCGGTT TGCCAAAAAA TTTCAATTCG **ATATTTGGAT** AAGCTACGCC CAACTTGCCC ACAAAGTATT **AATGCCTGGC** TCCCAGCGGT

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1260 AAGCATGCAG 1080 1170 450 540 630 720 810 990 TAAAAGTTTG CTAATAGGGG TTATCTCAGG CTCCTTACTT **GGACATCTGG** GGTTCTTTG GTAATAAAAG **GTCCAGAAGG** GTTGCATCTT TTGTTGCGGG CGGGACATTG TCCCAAATG GTGCTTTTTA TATTATATTG THITGTATCC TCGGAAGAGT TGTTTTCACA TGGCCGAATG GGTTGTTGAG AGTGCATAGT TGAGGAGGAA ATTGACGATG AACATATTAA AGCAGAGTAT ATTATACCTG ACATATTCCA CAGGTTTGCG AGCCAGAGAA GTCAGACGTG TCTTCAATGG CGTACGGGAA AGGATCGTGC TCGTCTGCCC GAATGGAGGC **TTAACAGTT** GAATGATCTT CTTGTTACTG CCAAAGCAAG AAACCTGTCC TTGAACAATG CAAACACACT AGATTTTTCT GACGCAAAAT GAGATGGCAA TAAACGACTT CTCGCCAAAA ACCTTCAGCA GAAGAAGTAA CCCACCATTC **AAAGAAAATG** TTTTTACACT ATTTACTCTT GCTTCTGGAC GTCCATGCAT AAGGATTCAT AGACTTACTT CGCCAAGGTG ATTAGAACGT CAAACTTGAG CAAAGGGAGC TGGCTTCTCT TGGAGAAGCT TATCATTTCT TTCGGGTATT ATGAATGGAG TTGGGATGC TTTATGTACA AGTCCTGCAT AGAAGAATGA TCCCCGAGGA TCAGTACGAA CCACATTTCT GGAATGCCAT CAGTCTATAT ATAATAATCT TTGGGGGTCT **AACTGGTTCT AAGTTGCGGA GCTTCTACCG** TTTACGATGC CAAGTCATTT ATAAGTGCCG GCCTACAATC CAACATCAAC AAGTGCATTA , TGACAAAGTT GGCCAGGAAA TTGCTGCCAA GAATTGGGGA **AAAGATTTTA** TTAGACGCCC TTTAAGGTCC CCCATCCTCG **AAAGGCTTCT** AGCAGACTCT TTCAATCTTC GAATAAGATA GGTTTTCAAG TGACAAAGTT CTCTTTCTAC TTCCTAGCGG TTTGGTGACT CATATTTGGA TCAATTTACG AGGAGTTGAA ATTGGATAGT CCTGGAGACT AGTTTACGAA CCCCTTGGGC GGGGAAAGGA CAAGAATTCA GCATTTGTAA AGGAAGAAAA CCGTTAGAGC CAAAGGTTCT **AAATTTTATA** TCCAAAGTAT CAATGCCCGG TTTGTGTT CAAGCTACGC CCAACTTGCC ATTTCAATTC

## FIG. 20

APPLN FILING DATE: OCTOBER 5 2001
TITLE: THEOBROMINE SYNTHASE POLYPEPTIDE OF COFFEE PLANT AND THE GENE ENCODING SAID POLYPEPTIDE INVENTOR(S): HIROSHI SANO ET AL APPLICATION SERIAL NO: 09/971,020 SHEET 5 of 9



CCT CAAGAAGTCC TGCATATGAA TGAAGGTGAA GGCGATACAA GCTACGCCAA 90
CCT TTCCTTGAAC AATGCATACG AGAATTGTTG CGGGCCAACT TGCCCAACAT 180
TCT GGACCAAACA CACTTTTAAC AGTGCGGGAC ATTGTGCAAA GTATTGACAA 270
ACC ATTCAGATTT TTCTGAATGA TCTTTTCCAA AATGATTTCA ATTCGGTTTT 360
GAA AATGGACGCA AGATAGGATC GTGCCTAATA AGCGCAATGC CTGGCTCTTT 450
TTG CACTCTTGTT ACAGTGTTCA TTGGTTATCT CAGGTTCCCA GCGGTTTGGT 540
TAC TCTTCCAAAG GATGCTCC GCCGTCCAG AAGGCATATT TGGATCAATT 630
AAA GAGTTGTTTT CACGTGGCCG AATGCTCCTT ACCTGCATTT GTAAAGTAGA 720
AAA GAGTTGTTTT CACGTGGCCG AATGCTCCTT TGCGAGAATTT TATATCTGGA 810
SAA GAAAAGTGCA TAGTTGAGGA GGAAGGTTCT TGCGAAATTT TATATCTGGA 900
SAA GATGATTACC CAGTAAGATC CCATGAACACA ATTAAAGCAG AGTATGTGGC 990
AGT GATGATTACC CAGTAAGATC CCATGAACACA ATTAAAGCAG AGTATATCGA AAGCTATTAT GCCAGACCA TGCGAAGCCA 1080
AAT AATCTTATCA TTTCTCTCGC CAAAAAGCCA GAGAAGTCAG ACGTGTAAAA 1170 GTGATGTGCA AGAATAAGAT TTACACCTTC AGCAGAAGAA GTAAAGTGCA TAGTTGAGGA GGAAGGTTCT TGCGAAATTT ATGCTGCCTT CTCTATTGAT GATGATTACC CAGTAAGATC CCATGAACAA ATTAAAGCAG ACGAACCCAT CCTCGCAAGT CATTTTGGAG AAGCTATTAT GCCTGACTTA TTCCACAGGC AGTIGGITIT TGTGCCGTTG GGGGTCTTTC GGGTATTGTC GTTTTGTATT CGTAATAAAA AGCAGTCGCA ATTCGATTGT CCTGCATATG AATGGAGCTC CAAGAAGTCC GAATGCATCC TACCATCTGG CTCTTGCCAA GGTGAAACCT TTCCTTGAAC / CAACAAGTGC ATTAAAGTTG CGGATTTGGG ATGCGCTTCT GGACCAAACA GGTTGGCCAG GAAGAAGAA ATGAATTAGA ACGTCCCACC ATTCAGATTT AGTTGGCCAG CCAAGCTTCT ACCGCAAACT CGAGAAAGAA AATGGACGCA ACCGCAAACT CGAGAAGAA AATGGACGCA AGGAGTCCAT GCATTITITG CACTCTTGTT ACAACAAGG GAGTATTTAC TCTTCCAAAG TTCTAAGGAT TCATTCGAAA GAGTTGTTT ( ACTTGACATG GAGAGAA GCTCTATTGAT G CTGCTATAAT ATTTAGTACA ATATTTTCAT AAAAAAAAA AAAAAAAA CCCTAGACTT GCCCATTATG ATGCTGCCTT TGGGCAAAGG CTACGGCAGA CTCTTCCCCG AGGAGTCCAT GATTGAATTG GGGATTGGTG CAAACAAAGG GGGATTGGTG C GTTCTCCACA TGAATTCGAC GAACCGAATC TAGTTTCAAT ATTCCATTCT AGATCAGTTT GACTTTTAAG ATCATTAATT TGCAGCAAAG TACGAAAGAT

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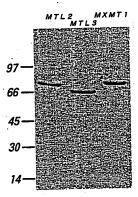


MXMT1 MTL1 MTL2 MTL3	MELQEVLHMNEGEGDTSYAKNASYN-LALAKVKPFLEQCIRELLRANLPN :::::::::::::::::::::::::::::::::::	49 50 50 50
MXMT1 MTL1 MTL2 MTL3	INKCIKVADLGCASGPNTLLTVRDIVQSIDKVGQEEKNELERPTIQIFLN ::::::::::::::::::::::::::::::::::::	99 100 100 100
MXMT1 MTL1 MTL2 MTL3	DLFQNDFNSVFKLLPSFYRKLEKENGRKIGSCLISAMPGSFYGRLFPEES	149 150 150 150
MXMT1 MTL1 MTL2 MTL3	MHFLHSCYSVHWLSQVPSGLVIELGIGANKGSTYSSKGCRPPVQKAYLDQ :::::S::LQF:::::T:::T:::R:::::ASP::::::: :::::CLQ:::::T:::ST::::ASP::::::	199 200 200 200
MXMT1 MTL1 MTL2 MTL3	FTKDFTTFLRIHSKELFSRGRMLLTCICKVDEFDEPNPLDLLDMAINDLI ::::::::::::::::::::::::::::::::::::	249 250 250 250
MXMT1 MTL1 MTL2 MTL3	VEGLLEEEKLDSFNIPFFTPSAEEVKCIVEEEGSCEILYLETFKAHYDAA A::R:G::::::V:IY:A:V:::::M:::::F::::Q:::LR:::G :::H::::::V:IYAA:V::L::::::F::::::LR:::G :::H::::::L:VYI::::::F::::::VL:::G	299 300 300 300
MXMT1 MTL1 MTL2 MTL3	FSIDDDYPVRSHEQIKAEYVASLIRSVYEPILASHFGEAIMPDL :::::CQ::::SPVYSD:HAR:AH:::::::::::::::I::I :::::CQ::::SPEYSD:HAR:AH::::L:::::::N::::I::I :::::EH:::::SV:A::::::I::I	343 350 350 337
MXMT1 MTL1 MTL2 MTL3	FHRLAKHAAKVLHMGKGCYNNLIISLAKKPEKSDV       378         :::F:TN::::IRL:::F::::::I       385         :::F:TN::::IRL:::F::::::I       385         :::F::::::PL:::F:::::::::::::::::::::::	

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FIG. 4

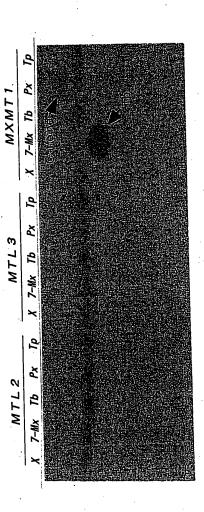


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## FIG. 6

